CLAIMS

1. A method of validating a flight plan constraint (C1), at an imposed waypoint, for an FMS flight computer (30) delivering flight presets to an aerodyne during a resumption of automatic following of a flight plan after a piloted flight phase, consisting, for a validation of said constraint (C1) by the FMS flight computer (30), in making a forecast of the displacement of the aerodyne up to an imposed waypoint, taking account of the transition between the instances of application by the aerodyne of the flight presets prevailing before the resumption of the automatic following of the flight plan and those newly provided by the FMS flight computer (30) during this same resumption, and in validating said constraint (C1) in the case where it would not be complied with by the aerodyne if it reached the imposed waypoint by following said forecast of displacement, doing so in order that it (C1) remain taken into account in the subsequent automatic following of the flight plan.

2. The method as claimed in claim 1, characterized in that the forecast of displacement of the aerodyne up to the imposed waypoint, taking account of the transition between the instances of application by the aerodyne of the flight presets prevailing before the resumption of the automatic following of the flight plan and those newly provided by the FMS flight computer (30) during the same resumption is made according to a first order variation model.

3. The method as claimed in claim 1, applied to the validation of an altitude constraint, characterized in that the forecast of displacement of the aerodyne up to the imposed waypoint taking account of the transition between the instances of application by the aerodyne of the flight presets prevailing before the resumption of the automatic following of the flight plan and those

newly provided by the FMS flight computer (30) during the same resumption is limited to a vertical trajectory forecast.

4. The method as claimed in claim 3, characterized in that the vertical trajectory forecast is made by assuming that the aerodyne has, during the vertical speed transition between its initial value Vz_0 before the automatic following of the flight plan by the FMS computer (30) and its final value Vz_f imposed by the FMS flight computer (30), a constant ground speed "GrdSpd" and a vertical speed Vz according to a first order variation model complying with the relation:

$$Vz = (Vz_0 - Vz_f)e^{(-t/\tau)} + Vz_f$$

t being the time variable and τ a constant characteristic of the aerodyne steered by its automatic pilot or its flight director, according to a law of acquisition of a vertical speed preset Vz_f.

5. The method as claimed in claim 3, characterized in that it consists in:

- estimating the date t_{seq} of passage of the aerodyne at the constrained waypoint on the basis of the distance $\Delta dist_0$ between the position of the aerodyne upon the instigation of the automatic following of the flight plan and the position of the constrained waypoint by assuming that the aerodyne has a constant ground speed GrdSpd and by applying the relation:

$$t_{seq} = \frac{\Delta dist_0}{GrdSpd}$$

- estimating the difference in altitude Δz_{seq} of the aerodyne between the predicted altitude at the

constrained waypoint and the value of the altitude constraint, by assuming that the vertical speed of the aerodyne changes, from its initial value Vz_0 before the automatic following of the flight plan by the FMS flight computer (30) to its final value Vz_f corresponding to the flight plan and imposed by the FMS computer (30), by following a first order variation model complying with the relation:

$$\Delta z_{seq} = -\tau\left(Vz_0 - Vz_f\right)\left(1 - e^{\left(\frac{-t_{seq}}{\tau}\right)}\right) + Vz_f \cdot t_{seq}$$

τ being a constant characteristic of the aerodyne steered by its automatic pilot or its flight director, according to a law of acquisition of a vertical speed preset Vz_f, and

- validating the taking into account of the altitude constraint in the case of compliance with the inequality:

$$\left|\Delta z_{seq}\right| > \left|\Delta z_0\right| - \Delta z_{marg}$$

Δz_{marg} being a safety altitude margin.

6. The method as claimed in claim 4, characterized in that the initial value V_{z0} of the speed of descent of the aerodyne at the moment of the resumption of the automatic following of the flight plan by the FMS flight computer (30), taken into consideration by the validation system, is measured, at the moment of the instigation of the automatic following of the flight plan, by vertical speed sensors (43) equipping the aerodyne.